

Stress and our Immunity

I have just recently had a patient come back with a deep sore throat that usually lands him on a course of antibiotics and several days off work. He has a young family, a new house and mortgage and often rotates his shifts at work. Luckily, this time we were able to keep him from the antibiotics and get him back to work in just a day or so, but we were a little hard pressed to explain why it always reoccurs in the same way when he is reasonably healthy.

The other day his wife happened to mention that he was interviewing for another job that would be more regular hours and quite a bit less stressful. While he himself didn't complain when I asked him about his work, supposing that it might be somewhat stressful, there were certain physical signs that told me that was the case. The links to stress and our immune system have been known for quite some time. So much so that there is a whole new branch of medicine called *psychoneuroimmunology*.

Of course there are stressors and there are stressors. We can forget to pay a bill on time and go through a brief note of panic or we may not be able to pay a bill because we already lost our job a month before and don't know when we may find another one, if ever. The first one is a stressor for sure, but the second one is an ongoing stressor. The first one may raise a sympathetic response temporarily, but the second could arouse an ongoing glucocorticoid response, which goes way past the simple immediate heart-racing emotional shock that goes with a small, quick reaction to stress.

There are two basic types of immune responses to an antigen. In both types the first cell to identify this invader is a macrophage that basically makes a wanted poster for the immune system to tell T helper cells of the thymus gland to spread the alarm and come and attack it in numbers. One of these types of reactions is called cell-mediated immunity where the identifiers are released also from the thymus gland as are the cytotoxic killer cells that eventually destroy the antigen or even tumors if that is the case. The other type stimulates the growth of something called B cells that will form-fit the agent and destroy it while locked on to it. The second type is more of a back-up system while the cytotoxic killer cells are more general. In fact, the reason the AIDS virus is so devastating is that it attacks the very T cells necessary to both types of immunity, so that eventually, without any defenses a victim could die of a proliferation of anything.

In laboratory studies, where stress is induced on the poor mice, there is a marked shrinkage of this thymus gland as well as other immune related tissues, simply from the stimulation of ongoing stress responses. This, of course, diminishes the ability of the thymus gland to keep up, not only with the production of antibodies, but the whole communication process and speed of the response as well. The agents most responsible for suppressing this response are those nasty glucocorticoids, the hormone that is the extension of ongoing stress. [Note: I have explained in many other previous articles that a normal sympathetic reaction to stress such as being chased by a lion, gear up under the stimulus of adrenaline etc. and relax again in a short time. But in a continued stress such as a long meeting with Revenue Canada over indiscretions in your taxes, will take place as a continuous secretion, probably until the entire six pack has been consumed.]

The reason the body does this is of course is because up until our modern age stress was more real than imagined. We always use the example of running into that lion in the streets, which we run away from and calm down from---end of event. In that

bygone age we lived and struggled for survival as a member of a group and so if we were starving because of not being able to bag that mastodon, we shared the stress load as a community. Modern stressors are much more tenuous (see article this issue; *Defining Stress*) even to the extent of being an imagined or projected stress. With the onset of a stressor like that lion, your body stimulates the immune response and gears up the immune reaction. However, if the reaction continues for more than an hour, the glucocorticoid secretion continues and of course disassembles the immune system, which is why I always died with a cold the day *after* the big exam. You might wonder why the immune system doesn't keep building along with the stress. If the stress is short, it does. If it continues more than an hour or so and the glucocorticoid response takes over, the immune system is depressed to guard against becoming too strong. What happens when the immune system gets too strong? It can start to attack our own tissues, which is called an *autoimmune reaction*.

Actually, there is a lot of evidence that autoimmune diseases like rheumatoid arthritis and multiple sclerosis, juvenile diabetes etc. can occur due to ongoing stress and which clearly has shown to make such diseases worse. So, it is not surprising that when an autoimmune disease happens that western doctors use steroids like prednisone, similar to the ones our body secretes in response to stress in order to slow down or shut down the immune system so that it stops attacking itself.

Personally, I don't think this is the end of story solution. Pretty soon using steroids on an ongoing basis may stop the progress of the disease, but it is not *the* answer. After awhile the steroids become their own problem, their own imbalance. Also, when the immune system is continuously disarmed, the body makes all kinds of adjustments.

What *is* the answer? The answer and the source point is the stress and our body's inability to handle it. What stimulates *your* stress? How has your body and mind become imbalanced as a result of it through the years? We should not stop trying to find the answers just because we've found a stopgap solution.

The importance of immunity

If the immune system only worked on colds and flu, bacteria and viruses, then ignoring it and catching the occasional cold may be the better option. But the immune system can do a lot more, like destroying tumors and other indiscriminant cells that eventually become cancers. Many cancers are traced back to the over-proliferation of viruses. If our immune system has been shut down or severely diminished by ongoing stress, then stress could be the ultimate culprit.

In my own life and the life of many of my patients the concept of stress is almost synonymous with other factors such as shame or inadequacy. We feel that we should be able to consciously control our stress, but this is true in very few cases either socially or economically. The "should" is the very part that adds to our stress in the form of self-reprisal.

In Chinese medicine anger and frustration stress involve the liver, worry stress, the stomach, fear and stress, the kidneys and grief and stress the lungs. In my patient's case we are calming the liver and bolstering the lung to halt the constant cycle of recurring sore throats and antibiotics. In the meantime, by changing his job, he is reframing his life to deal with the some of the sources of his stress.